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Maurice E. Stucke
Professor, University of Tennessee College of Law

Ariel Ezrachi
Slaughter and May Professor of Competition Law, The University of Oxford

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Maurice E. Stucke* & Ariel Ezrachi**

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ABSTRACT

The European Commission's Statement of Objections forms the latest addition to the ongoing debate on the possible misuse of Google's position in the search engine market. The scholarly debate, however, has largely been over the exclusionary effects of search degradation. Less attention has been dedicated to the dimension of quality – whether and how a search engine, faced with rivals, could degrade quality on the free side. We set out to address this fundamental question: with the proliferation of numerous web search engines and their free usage and availability, could any search engine degrade quality? We begin our analysis with a review of the network effects that may impact the relative power of a search engine. We next identify three necessary, but not sufficient, variables for quality degradation to occur in search results. With these three variables in mind, we consider instances when a search engine could degrade quality despite competition from rivals.

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* Professor, University of Tennessee College of Law; Co-founder, The Konkurrenz Group.

** Slaughter and May Professor of Competition Law, The University of Oxford. Director, Oxford University Centre for Competition Law and Policy.

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INTRODUCTION

The exponential growth of the Internet has seen a proliferation of email platforms, social networks,[1] texting, mapping, video sharing, gaming, and online communications, many of which are provided free of charge.[2] Many platforms bring together both consumers attracted to the platforms' often-free services and advertisers seeking to target these consumers. The common business model in these multi-sided markets involves utilizing one's customer base to generate revenue. Despite offering consumers a free product or service, these firms can earn income by selling advertisers access to these consumers' behaviors.

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1 Examples of social networks include LinkedIn, Facebook, and Academia.

2 *See* Eur. Comm'n Case No. COMP/M. 7217—Facebook/WhatsApp (Oct. 3, 2014) (C 7239) 24-25, ¶ 47 (noting that the "vast majority of social networking services are provided free of monetary charges").

By and large, when a product or service is offered for free, the primary dimension of competition is quality.[3] A competitive market is therefore likely to stimulate investment in quality. But when a firm earns its profits from one side of the market, its conception of quality may be distorted. The firm may have an incentive to degrade quality on the free side of the market below levels that consumers prefer, if doing so increases its profitability, or market power, among the paying participants.

Quality degradation exists in both paid and free multi-sided markets. Newspapers, for example, compete vigorously but skew their news coverage through self-censorship to avoid offending an important category of advertisers.[4] Commercial radio stations may disproportionately play certain songs in exchange for payment from music companies.[5] Entertainment producers can develop a show's storyline to highlight a sponsor's product at the expense of artistic quality.[6] In these instances, the customer is more than just the recipient of a product or service – the customer constitutes a commodity traded to the other side of the market. When the product or service is provided to customers free of charge, the focal point shifts to the value gained on the other side of the market. Consequently, if degrading the quality of the free product maximizes profit on the other sides of the market, producers may prioritize the latter. The extent to which quality may be degraded depends on the level of competition and the ability of consumers to identify and appraise changes in quality.

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3 Eur. Comm'n Case No. COMP/M. 6281—Microsoft/Skype (Oct. 7, 2011) (C 7279); European Commission Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077); Office of Fair Trading, Completed Acquisition by Motorola Mobility (Google, Inc.) of Waze Mobile Ltd., ME/6167/13 at ¶ 28 (Dec. 17, 2013) (OFT considering whether merger "may dampen Google's incentive to innovate and improve quality as a result of the loss of an innovative rival").

4 Allen P. Grunes & Maurice E. Stucke, *Plurality of Political Opinion and the Concentration of the Media, in* GENERAL REPORTS OF THE XVIIITH CONGRESS OF THE INTERNATIONAL ACADEMY OF COMPARATIVE LAW 571, 575-76 (Karen B. Brown & David V. Snyder eds., 2012).

5 After a series of scandals where music companies paid radio stations to play certain songs, the U.S. Federal Communications Commission promulgated "payola" rules where the broadcaster must disclose such payments. *See* U.S. Fed. Commc'ns Comm'n, *The FCC's Payola Rules*, CONSUMER GUIDE (Feb. 24, 2014), http://www.fcc.gov/guides/payola-rules [https://perma.cc/FCT5-BKNN].

6 *See* Michael Kmet, *'Breaking Bad': Product Placement and "Quality" Television*, MEDIASCAPE (Aug. 18, 2013), http://www.tft.ucla.edu /mediascape'/blog/?p=2036 [http://perma.cc/DSZ9-DHWG].

In this paper we explore the interface between competition and quality in the two-sided market of online search engines.[7] Competition officials long ago rejected the canard that because a product is free, it is somehow outside the competition laws.[8] Although the product or service is free, the platforms still compete to attract users, collect their personal data, and target them with behavioral ads. As officials from the European Commission stated in 2015:

> In two-sided markets, where products are offered to users for free and monetised through targeted advertising, personal data can be viewed as the currency paid by the user in return for receiving the 'free' product, or as a dimension of product quality. Hence, a website that, post-merger, would start requiring more personal data from users or supplying such data to third parties as a condition for delivering its 'free' product could be seen as either increasing its price or as degrading the quality of its product.[9]

We explore elsewhere how and why quality forms a fundamental aspect of competition.[10] Competition agencies acknowledge that quality is a "key non-price consideration that determines whether consumers will purchase a product."[11] That significance was echoed by competition agencies that took part in the Organisation for Economic Co-operation and Development (OECD)'s 2013 roundtable on the role and measurement of quality.[12] Participating jurisdictions agreed that quality competition drives innovation and economic growth and that a decrease in quality can be just as harmful to

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7 We discuss the relationship between competition and quality in Ariel Ezrachi & Maurice E. Stucke, *The Curious Case of Competition and Quality*, 3 J. ANTITRUST ENFORCEMENT 227 (2015).

8 *See, e.g.*, Office of Fair Trading, Completed Acquisition by Motorola Mobility (Google, Inc.) of Waze Mobile Ltd., ME/6167/13, at ¶¶ 7-8 (Dec. 17, 2013).

9 Eleonora Ocello, Cristina Sjödin & Anatoly Subočs, *What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU Merger Case*, 2015 COMPETITION MERGER BRIEF 2, 6.

10 Ezrachi & Stucke, *supra* note 7, at 2-8.

11 Org. for Econ. Co-operation and Dev., *The Role and Measurement of Quality in Competition Analysis*, DAF/COMP(2013), at 5 (Oct. 28, 2013), http://www.oecd.org/competition/Quality-in-competition-analysis-2013.pdf [https://perma.cc/TDY4-3C6B] [hereinafter OECD Quality Report].

12 *Id.*

consumers (if not more harmful, given health and safety concerns) as a price increase.[13]

Competition authorities cannot ignore quality – often the primary parameter of competition when the service is free. The competition between search engines, which have evolved to become the gateways and guides that link users to relevant websites,[14] focuses on quality. Quality competition among search engines includes their capacity to quickly deliver the most relevant results in response to a search query. But, as we discuss, the impact of other revenue-generating activities may lead to distortion of that quality competition and inferior results.

Authorities increasingly recognize the search degradation phenomenon and its impact on competition. In April 2015, the European Commission (EC) issued a Statement of Objections concerning Google's systematic favoring of its comparison-shopping services in its general search results.[15] This quality degradation, the EC found, harmed rival comparison-shopping services, consumers, and innovation.[16] The Commission outlined its preliminary view that this practice amounts to an abuse of a dominant position. In her statement on this case, Commissioner Vestager noted:

> [W]hen a consumer enters a shopping-related query in Google's search engine, Google's comparison shopping product is systematically displayed prominently at the top of the search results. This display is irrespective of whether it is the most relevant response to the query. Thus, Google's commercial product is not subject to the

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13 *Id.*

14 Ioannis Lianos & Evgenia Motchenkova, *Market Dominance and Search Quality in the Search Engine Market*, 9 J. COMPETITION L. & ECON. 419, 422 (2013) (discussing how search engines "act as 'information gatekeepers': they not only provide information on what can be found on the web (equivalent to yellow pages), but they also are 'an essential first-point-of-call for anyone venturing onto the Internet'" and how they differ from other two-sided platforms, as "search engines detain an important amount of information about their customers and advertisers (the 'map of commerce')").

15 European Commission Press Release Memo/15/4781, Antitrust: Commission sends Statement of Objections to Google on comparison shopping service (Apr. 15, 2015), http://europa.eu/rapid/press-release_MEMO-15-4781_en.htm [https://perma.cc/T7UM-3Z5U].

16 *Id.* ("Google's conduct has a negative impact on consumers and innovation. It means that users do not necessarily see the most relevant comparison shopping results in response to their queries, and that incentives to innovate from rivals are lowered as they know that however good their product, they will not benefit from the same prominence as Google's product.").

> same algorithms as other comparison shopping service . . . with the result that consumers may not necessarily see the most relevant results in response to their queries, and Google's competitors may not get the commercial opportunities that their innovations deserve.[17]

The Commission's Statement of Objections formed the latest addition to the ongoing debate on the possible misuse of Google's market power in the search engine market. That debate has focused on manipulation of search engine results, the impact this may have on actual or potential competitors operating downstream, and the effects on the competitive process.[18] Less attention has been attributed to the dimension of quality – whether and how a search engine, faced with rivals, could degrade quality on the free side.[19]

In response to the Commission's concerns, Google stated that, although its search engine "may be the most used . . . people can now find and access information in numerous different ways – and allegations of harm, for consumers and competitors, have proved to be wide of the mark."[20] Asserting that "people have more choice than ever before,"[21] Google identified "numerous other search engines such as Bing, Yahoo, Quora, DuckDuckGo and a new wave of search assistants like

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17 European Commission, Statement by Commissioner Vestager on Antitrust Decisions Concerning Google, STATEMENT/15/4785 (Apr. 15, 2015), http://europa.eu/rapid/press-release_STATEMENT-15-4785_en.htm [https://perma.cc/27YX-R3P6].

18 Andrea Amelio & Dimitrios Magos, *Economic Background of the Microsoft/Yahoo! Case*, 2010 COMPETITION POL'Y NEWSL. 51; U.S. Fed. Trade Comm'n, Statement of the Federal Trade Commission Regarding Google's Search Practices, In the Matter of Google Inc., FTC File No. 111-0163 (Jan. 3, 2013), http://www.ftc.gov/system/files/documents/public_statements/295971/130103googlesearchstmtofcomm.pdf [https://perma.cc/J7U9-KCMD]. For the EU Commission's proceedings, which were initiated in November 2010, *see 39740 Google Search*, EUROPEAN COMMISSION, http://ec.europa.eu/competition/elojade/isef/case_details.cfm?proc_code=1_39740 [https://perma.cc/24M4-P7L7].

19 Lianos & Motchenkova, *supra* note 14, at 424 n.18, 425 (noting that most of the existing literature focuses on the advertising side of search engines, finding "a threat of reduction in the quality of search results, if the search engine market is monopolized or dominated by a single firm" and suggesting that their model be extended to "an oligopoly setting" as a "natural step forward" since it "is a better description of the current practice with several engines competing in the search market (such as Google, Bing, and Yahoo, among others)").

20 *The Search for Harm*, GOOGLE EUROPE BLOG (April 15, 2015), http://googlepolicyeurope.blogspot.com/2015/04/the-search-for-harm.html [https://perma.cc/P9F6-KHVQ].

21 *Id.*

Apple's Siri and Microsoft's Cortana,"[22] in addition to "a ton of specialized services like Amazon, Idealo, Le Guide, Expedia or eBay,"[23] and "social sites like Facebook, Pinterest and Twitter."[24]

We set out to address this fundamental issue: to what extent will competition from smaller search engines prevent larger search engines from degrading the quality of search results (and vice versa)? With the proliferation of numerous web search engines and their free usage and availability, can any search engine afford to degrade quality? After all, Internet browsers enable users to run their queries on different search engines with access to a multitude of services, which are a click away.

Our aim here is to provide competition authorities and courts with an analytical framework for assessing whether a firm can degrade quality even if it competes with rivals. We do not address the distinct issue of whether and when the competition authority should intervene. As our article explores, there is no single panacea for quality degradation. The remedy will depend on: (1) the particular behavior, such as whether the search engine is simply degrading quality to maximize profits or is doing so to illegally maintain or attain a monopoly or leverage its dominance into another market; (2) the context of the behavior, such as whether quality degradation is the theory of anticompetitive harm by a proposed merger or by an existing, dominant firm; and (3) prevailing market conditions, such as the extent to which network effects and status quo bias are enabling the quality degradation.

We begin our analysis with a review of positive feedback loops and network effects in the search engine market. Part II illustrates the interface between competition and quality and outlines the market conditions that may support quality degradation. Following this, we consider three variables affecting quality degradation in search results.[25] The first relates to a search engine provider's ability and incentive to intentionally degrade quality on the free side of the market (namely the search results) below levels that most users prefer. This, in turn, depends on the degree of several network effects, and the extent to which the search engine's business model benefits from scale and scope. The second variable is consumers' ability and incentive to accurately assess quality

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22 *Id.*

23 *Id.*

24 *Id.*

25 *See* Ezrachi & Stucke, *supra* note 7 (discussing how competition authorities have struggled to identify the dimensions of quality competition important to many consumers).

differences. The third variable is the cost of conveying to consumers search engines' inherent quality differences and the costs of switching to a competing service. With these three variables in mind, we consider why a search engine would intentionally degrade quality despite competition from rivals.

I. Network Effects and the Incentive to Degrade Quality

Search engines are the gateway to Internet content; they provide a crucial mapping function, without which the digital world would become largely inaccessible. The major search engines do not charge users for searching the web. Consumers often "pay" with their personal data, used by many search engines to target consumers via behavioral ads.

To differentiate themselves from one another, search engines compete for users on quality. Although quality has multiple dimensions,[26] we focus on one important quality dimension for search engines: the relevance of search results to the search inquiry. In 2010, the European Commission investigated a licensing agreement between Microsoft and Yahoo regarding search engine technology.[27] The Commission found that search engines compete over the quality of search results (i.e., their relevance and speed) as well as the quality of the user interface.[28] The "quality and relevance of the algorithmic search engine" was, the Commission found, "the most important factor in attracting users to a particular search engine."[29]

A search engine's commercial model relies on its intermediary role, connecting "content providers (who want users), users (who want content), and advertisers (who want users)."[30] As explained in the FTC Staff Report, "Although a user does not pay for the web search service, the user's focused interest - or intent - is very valuable to advertisers, because users are effectively identifying themselves as potential customers through the content of their queries."[31] The

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26 *See, e.g.*, Ocello, Sjödin & Subočs, supra note 9, at 9 ("Privacy could be regarded as a non-price parameter of competition which may be degraded by the merged entity post-merger.").

27 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077).

28 *Id.* at ¶ 101.

29 Teresa Vecchi, Jerome Vidal & Viveca Fallenius, *The Microsoft/Yahoo! Search Business Case*, 2 EUR. COMM'N COMPETITION POL'Y NEWSL. 41, 46 (2010).

30 Lianos & Motchenkova, *supra* note 14, at 421.

31 Memorandum from FTC Bureau of Competition Staff to the Comm'n on Google Inc. 8. (Aug. 8, 2012), *available at* http://graphics.wsj.com/google-

intermediary role of search engines enables them to derive their revenue from advertising.[32] For example, in 2013, 91 percent of Google's revenues came from advertisers[33] and 79 percent of Yahoo!'s total revenue came from display and search advertising.[34]

Search engine algorithms provide users with "sponsored" results and "organic" results.[35] In the case of "sponsored" search results, most advertisers pay search engines on a cost-per-click basis.[36] Since payment is dependent upon a user clicking an ad, search engines generate revenues "primarily by delivering relevant, cost-effective online *advertising*."[37] Indeed, the goal of AdWords, Google's main auction-based advertising program, "is to deliver ads that are so useful and relevant to

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ftc-report [https://perma.cc/5RUP-FHQS] [hereinafter FTC Staff Report]. A few caveats are in order about portions of this report, which the FTC released (mistakenly) under the Freedom of Information Act to the *Wall Street Journal*. First, only the even pages were released, so the missing odd pages may have contained important qualifications. Second, other reports, including any prepared by the FTC economists and Google, were not released. Third, although the staff recommended that the FTC file a complaint, the Commissioners elected not to do so. Google said in response to the report's disclosure, "We understand that what was sent to the Wall Street Journal represents 50% of one document written by 50% of the FTC case teams. Ultimately both case teams (100%) concluded that no action was needed on search display and ranking. Speculation about consumer or competitor harm turned out to be entirely wrong. On the other issues raised, we quickly made changes as agreed with the FTC." *The FTC Report on Google's Business Practices*, WALL ST. J., Mar. 24, 2015, http://graphics.wsj.com/google-ftc-report [https://perma.cc/WPX6-GFAZ].

32 Microsoft/Yahoo!, *supra* note 28, at ¶ 33.

33 Google Inc., Annual Report (Form 10-K) 9 (Jan. 30, 2014) [hereinafter Google 2013 10-K].

34 Yahoo! Inc., Annual Report (Form 10-K) 13 (Feb. 14, 2014) [hereinafter Yahoo 2013 10-K].

35 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 100.

36 *Id.* at ¶¶ 35, 45; Amelio & Magos, *supra* note 18, at 50 (internal footnotes omitted):

> The expected revenue from an ad is contingent on the probability that an ad is clicked (measured by the likelihood that users click on ads, also known as the Click Through Rate ('CTR')) since advertisers pay platforms only when users click on the displayed ads. Search platforms use a 'quality' score, that reflects the expected CTR, to adjust the ranking accordingly. Google was the first to introduce the idea of ranking the ads in 2002 by weighting the advertisers' bids with the 'quality score'. As explained on its web site, Google currently uses a variety of indicators that try to measure quality and determine the quality score of an advertiser.

37 Google 2013 10-K, *supra* note 33, at 3 (emphasis added); *see also* Microsoft/Yahoo!, at ¶ 101.

search queries or web content that they are a form of information in their own right."[38]

Defenders of sponsored search results downplay the market power of general search engines, pointing to mobile applications as alternative platforms for search inquiries. The data does not support this assertion. Even in the past year, the number of search queries has increased in the U.S.[39] "As consumers shift their digital activity to mobile, growth in the search market is being driven by both smartphones (up 17 percent from the prior year) and tablets (up 28 percent)," while desktop search "has declined marginally during the same period."[40] Moreover, Google's "strong leadership on both smartphones and tablets boosts its share of the multi-platform search market by several percentage points vs. desktop alone."[41]

In determining whether these search engines' practices violate antitrust law, we first consider whether there are barriers to entry in the search engine market. Next, we analyze positive feedback loops and network effects to better understand search engines' incentives and abilities to degrade quality.[42]

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38 Google 2013 10-K, *supra* note 33, at 4.

39 Adam Lella & Andrew Lipsman, *2015 U.S. Digital Future in Focus*, COMSCORE (Mar. 26, 2015), https://www.comscore.com/Insights/Presentations-and-Whitepapers/2015/2015-US-Digital-Future-in-Focus [https://perma.cc/CPJ3-86LA] ("total U.S. multi-platform web search market grew 5 percent in query volume in Q4 2014 vs. the previous year").

40 *Id.*

41 *Id.*("Google remains the leader in the U.S. explicit core search market with 66 percent market share of search queries conducted in Q4 2014, followed by Bing at 20 percent and Yahoo at 11 percent. Bing increased its market share in 2014, while Yahoo's recent search partnership with Firefox has also bolstered its share."). Moreover smartphone users, in one 2014 survey, spent more time with apps they've downloaded from Facebook and Google than with any other company: "Of the apps they chose to download, users spent 13% of their total time in Facebook's apps," and 12% of their time with Google apps. Matt Rosoff, *Facebook and Google Are Winning the App War*, BUSINESS INSIDER UK (June 29, 2015), http://uk.businessinsider.com/facebook-and-google-are-winning-the-app-war-2015-6 [https://perma.cc/5U67-77JH].

42 This part is derived from MAURICE E. STUCKE & ALLEN P. GRUNES, BIG DATA AND COMPETITION POLICY (Oxford University Press, forthcoming 2016) (discussing data-driven network effects).

A. The Importance of Entry Barriers and Switching Costs in Competition Law

Beyond per se violations, antitrust analysis centers upon ease of entry into the market at issue.[43] According to the literature, a company cannot maintain dominance when entry into its market is: timely (generally under two years), likely (profitable for the entrants), and sufficient (the entrants would attain sufficient business to prevent the exercise of market power by the incumbent firms). As the European Commission stated, "[w]hen entering a market is sufficiently easy, a merger is unlikely to pose any significant anti-competitive risk."[44] Suppose entry barriers in the search market were low. In this case, if the merging search engines were to reduce quality below competitive levels, entrants could presumably seize the opportunity to profit and competition would be fully restored. Whether this is empirically true is another matter.[45]

Relatedly, antitrust authorities evaluate whether a dominant company's customers face high switching costs.[46] If so, the company can increase price and degrade quality even in the presence of competitors. The U.S. Supreme Court explained how prohibitive switching costs enabled Kodak to manipulate the aftermarket of parts and servicing for their photocopiers: "If the cost of switching is high, consumers who already have purchased the equipment, and are thus "locked in," will tolerate some level of service-price increases before changing equipment brands."[47]

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43 United States v. Microsoft Corp., 253 F.3d 34, 51 (D.C. Cir. 2001) (absent direct evidence, monopoly power "may be inferred from a firm's possession of a dominant share of a relevant market that is protected by entry barriers"). Entry barriers "are factors (such as certain regulatory requirements) that prevent new rivals from timely responding to an increase in price above the competitive level." *Id.*

44 EUROPEAN COMM'N, HORIZONTAL MERGER GUIDELINES ¶ 68 ("For entry to be considered a sufficient competitive constraint on the merging parties, it must be shown to be likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger.").

45 *See generally* Amanda P. Reeves & Maurice E. Stucke, *Behavioral Antitrust*, 86 IND. L. J. 1527 (2010); Maurice E. Stucke, *Behavioral Economists at the Gate: Antitrust in the Twenty-First Century*, 38 LOY. U. CHI. L. J. 513 (2007).

46 PSI Repair Servs., Inc. v. Honeywell, Inc., 104 F.3d 811, 818 (6th Cir. 1997) ("Switching costs are borne by customers who have already purchased a product and who would then incur some cost in switching to another product.").

47 Eastman Kodak Co. v. Image Technical Servs., Inc., 504 U.S. 451, 476-77 (1992) (noting that "a seller profitably could maintain supracompetitive prices in the aftermarket if the switching costs were high relative to the increase in service prices, and the number of locked-in customers were high relative to the number of new purchasers" and how this strategy is

The search engine market is believed to have low barriers to entry as well as minimal switching costs. Some claim that "[o]nline markets are notable for their low entry barriers and typically do not require big data for entry."[48] Google's Chairman, for example, stated that "[t]he barriers to entry are negligible, because competition is just one click away."[49] Because search engines are all free, easy to use, and one click away, switching costs would likely be low.

Given these attributes, how could any search engine maintain market power while intentionally degrading quality? There is no empirical support for concluding that entry barriers are invariably low or high across online markets. The reality is that entry analysis, as in other markets, is fact-specific.

B. Network Effects as a Barrier to Entry

One important barrier to entry involves network effects, which can be direct or indirect. Direct network effects arise when a consumer's utility from a product increases as others use the product.[50] A classic example is the telephone. As more individuals acquire telephones, the number of people a caller can reach increases, leading to the telephone's enhanced utility. Indirect network effects arise when people increasingly use a product or technology (for example, software platforms), leading to its betterment. Microsoft's desktop computer operating system is a classic example: the more people that use the platform, "the more there will be invested in developing

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very appealing when the seller can price discriminate between its locked-in customers and potential new customers).

48 Darren S. Tucker & Hill B. Wellford, *Big Mistakes Regarding Big Data*, ANTITRUST SOURCE 1 (Dec. 2014).

49 Eric Schmidt, *Why Google Works*, HUFFINGTON POST (Jan. 20, 2015), http://www.huffingtonpost.com/eric-schmidt/why-google-works_b_6502132.html [https://perma.cc/58UF-DW4H].

50 Marina Lao, *Networks, Access, and "Essential Facilities": From Terminal Railroad to Microsoft*, 62 SMU L. REV. 557, 560-61 (2009) ("The defining characteristic of network industries is the increasing value of their products to users as the number of users increases, a phenomenon called 'network effects' or demand-side economies of scale"; the increased value can come directly ("having a greater number of interconnections as a result of more users" (e.g., telephones)) or indirectly ("having more supporting complements developed for that product as the number of users increases" (e.g., Windows operating system))); *see also* United States v. Microsoft Corp., 84 F. Supp. 2d 9, 20 (D.D.C. 1999) (discussing the "positive network effects" of Windows); Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-3601 (discussing the indirect network effects of streaming media players).

products compatible with that platform, which, in turn reinforces the popularity of that platform with users."[51]

Online multi-sided markets may have several network effects. Social networks, like Facebook, exhibit traditional network effects. As more people join Facebook, the value in using the social network increases. We explore three other types of network effects that characterize the search engine market.

1. Trial and Error

The first potential network effect is linked to the scale of search inquiries processed by a search engine. Trial-and-error, or learning by doing, means that more searches increase the search engine's likelihood of identifying relevant results. A search engine cannot read the consumer's mind. When a consumer enters a query, the search engine quickly generates an opinion as to what information users will find most useful.[52] Google's Executive Chairman explained:

> [S]earch terms . . . are processed by the search engine's mathematical algorithms, which determine the probability that any given webpage will be responsive to the search. The user then receives results that are rank-ordered based on the search engine's judgment of the likelihood that each result matches what the user was seeking in entering the search terms.[53]

The search engine can record which links, if any, its users actually choose. If users select a link originally offered on the third or fourth page of results, the search engine's algorithms can utilize that information to move that link up the list and demote less frequently selected links.[54] As more searches are

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51 Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-3601, ¶ 1061 [hereinafter CFI Microsoft].

52 Dissenting Statement of Comm'r Pamela Jones Harbour, In the Matter of Google/DoubleClick, F.T.C. File No. 071-0170, at 7 (Dec. 20, 2007) ("Type the search term 'apple' into the Google search engine, and Google will 'know' whether the user is focusing on food (apple recipes) or technology products (Apple computers), depending on which websites the user recently visited (Cooking Light versus MacWorld) as well as what searches she recently conducted (Golden Delicious versus iPod).").

53 *The Power of Google: Serving Consumers or Threatening Competition?: Hearing Before the Subcomm. on Antitrust, Competition Policy and Consumer Rights of the S. Comm. on the Judiciary*, 112th Cong. 2 (2011) (statement of Eric Schmidt, Executive Chairman, Google Inc.).

54 FTC Staff Report, *supra* note 31, at 14, quoting Google's former chief of search quality Udi Manber:

> The ranking itself is affected by the click data. If we discover that, for a particular query, hypothetically, 80 percent of people click on Result No. 2 and only 10 percent

run, the search engine gains more trials, generating the necessary information to predict consumer preferences. Each user provides the search engine with feedback regarding any errors. The search engine will respond by quickly recalibrating its offerings.[55] Increased traffic thus improves search results.[56]

A user may not care if his or her neighbors use the same search engine. But one can benefit (and one's utility can increase) when others uses the same search engine. Unlike the telephone, the quality and utility of search engines can increase regardless of the individual's connection to other users. In fact, the more heterogeneous the sample size, the better the search engine's capability to identify relevant responses for both popular and less frequent queries ("tail" queries).[57]

As a result, entry barriers into the search engine market are high.[58] In 2010, Microsoft reportedly invested "more than $4.5 billion into developing its algorithms and building the physical capacity necessary to operate Bing."[59] Although a new entrant can hire tech talent, it would still lack the scale of this trial-and-error experimentation.[60] Microsoft argued, and the European Commission agreed, "scale is an important element to be an effective competitor."[61] With fewer trials, entrants

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> click on Result No. 1, after a while we figure out, well, probably Result 2 is the one people want. So we'll switch it.

Other Google executives confirmed that "click data is important for many purposes, including, most importantly, providing 'feedback' on whether Google's search algorithms are offering its users high quality results." *Id.*

55 *Testimony of Eric Schmidt, Executive Chairman, Google Inc. Before the Subcomm. on Antitrust, Competition Policy and Consumer Rights of the S. Comm. on the Judiciary*, 112th Cong. 3 (2011) (statement of Eric Schmidt, Executive Chairman, Google Inc.); Press Release, U.S. Dep't of Justice, Statement of the Department of Justice Antitrust Division on Its Decision to Close Its Investigation of the Internet Search and Paid Search Advertising Agreement Between Microsoft Corporation and Yahoo! Inc. (Feb. 18, 2010), http://www.justice.gov/atr/public/press_releases/2010/255377.pdf [https://perma.cc/7QJY-GBU4].

56 FTC Staff Report, *supra* note 31, at 14 (stating "[t]he more search users there are at any given time, the more experiments can be run, the faster they can be completed, and the more improvements that can be made to the search algorithms" and how "search providers run experiments on large volumes of users"); Vecchi, Vidal & Fallenius, *supra* note 29, at 44, 46.

57 FTC Staff Report, *supra* note 31, at 14; Microsoft/Yahoo!, *supra* note 28, at ¶ 162 (noting Microsoft's claim).

58 FTC Staff Report, *supra* note 31, at 76 ("Along with specialized algorithms, search and search advertising platforms require enormous investments in the technology and infrastructure required to crawl and categorize the entire Internet.").

59 *Id.*

60 *Id.*

61 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 153; *see also* FTC Staff Report, *supra* note 31, at 76 (noting

have fewer opportunities to predict search terms, observe subsequent errors, and perceive trends (consumers' search terms relating to a hot topic). Entrants' ability to identify sites that consumers prefer is likely to remain inferior, leaving the entrant at a competitive disadvantage in attracting consumers and advertisers.[62] Recognizing this, a smaller search engine may instead specialize in specific functions, such as travel and flight options on travel-specific Internet sites, like Kayak and Expedia. However, by becoming a niche player, the search engine could lose a significant segment of the population.[63]

Narrower user groups skew search results to match their preferences, which may differ from those of other groups. Accordingly, an older user group may through usage make the search engine less attractive to younger user groups. Medium-sized engines could collaborate to widen their respective search groups. Indeed, Microsoft justified its Yahoo partnership as necessary to achieve greater scale of behavioral trial-and-error learning.[64] Before the partnership, fewer people used Microsoft

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that Internet search, search advertising, and search syndication are "markets characterized by substantial scale effects").

62 Pamela Jones Harbour & Tara Isa Koslov, *Section 2 in a Web 2.0 World: An Expanded Vision of Relevant Product Markets*, 76 ANTITRUST L.J. 769, 784 (2010) ("Google search engine has become further entrenched as the dominant search site, and the firm has accumulated even more search data. Given the role of network effects, one might wonder whether any other firm will be able to chip away at Google's search supremacy without access to a comparable trove of data.") (internal citations omitted); EUR. DATA PROT. SUPERVISOR, PRIVACY AND COMPETITIVENESS IN THE AGE OF BIG DATA: THE INTERPLAY BETWEEN DATA PROTECTION, COMPETITION LAW AND CONSUMER PROTECTION IN THE DIGITAL ECONOMY 35 (preliminary opinion Mar. 2014) [hereinafter EDPS Preliminary Opinion] ("Successful online providers persuade increasing numbers of customers to provide more personal information which increases the value of the service to advertisers, thus generating 'network effects' whereby yet more customers are attracted to the service.").

63 Yusuf Mehdi, Remarks at the Credit Suisse Annual Technology Conference (Dec. 1, 2009) (emphasis added):

> [T]here's this kind of inverse power loss, where 39 percent of the users account for 66 percent of all the searches. I think of them as the heavy searchers. Ourselves and Yahoo! and others have been losing heavy searchers for the last number of years. Since the Bing launch, we've actually inverted that, we're actually growing heavy searchers. And when you look at the demographics, we are over-indexed on 18 to 24 year olds now as a result of those heavy users. *Before that, we were over-indexed on 65-year plus in terms of demographics, which is our MSN base.*

64 In December 2009, Microsoft partnered with Yahoo! to provide the exclusive algorithmic and paid search platform for the Yahoo! web sites. Microsoft believed this agreement would allow it over time to improve the effectiveness and increase the value of its "search offering through greater scale in search queries and an expanded and more competitive

and Yahoo's search engines than Google. As Microsoft's then CEO said, "it turns out there's a feedback loop in the search business, where the most searches you serve, or paid ad searches you serve, the more you learn about what people click on, what's relevant, and it turns out that scale drives knowledge which then can turn around and redrive innovation and relevance."[65] The OECD found increasing returns to scale from data where "the strong get stronger and the weak get weaker, leading to extreme outcomes."[66]

In the search engine market, increased market usage and greater market share correlates with increased quality. Engine users benefit when other individuals conduct searches. As the search engine conducts more trial-and-error experiments, its superior results will likely attract still others to use the search engine, leading to a positive feedback loop.

2. Scope of Data

A second potential network effect involves the scope of data on the user. Search engines use a variety of personal data from users to improve results. Users may be registered with other services offered by the company, including email, browsers, texting, and mapping service. The company is thus able to develop more comprehensive user profiles that better predict that particular individual's tastes and interests. Search engines can use this information to better target the user with personalized organic and sponsored search results.[67]

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search and advertising marketplace." Microsoft Corp., Annual Report (Form 10-K) 6 (July 28, 2011).

65 Steve Ballmer & Carol Bartz, Remarks from the Conference Call Held to Announce the Search Engine Agreement Between Yahoo! and Microsoft (July 29, 2009) (transcript available in Microsoft News Center).

66 ORG. FOR ECON. CO-OPERATION AND DEV., DATA-DRIVEN INNOVATION FOR GROWTH AND WELL-BEING: INTERIM SYNTHESIS REPORT 29 (2014) [hereinafter OECD Interim Synthesis Report]:

> The accumulation of data can lead to significant improvements of data-driven services which in turns can attract more users, leading to even more data that can be collected. This "positive feedback makes the strong get stronger and the weak get weaker, leading to extreme outcomes" (Shapiro and Varian, 1999). For example, the more people use services such as Google Search, or recommendation engines such as that provided by Amazon, or navigation systems such as that provided by TomTom, the better the services as they become more accurate in delivering requested sites and products, and providing traffic information, and the more users it will attract.

67 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 40 (noting that a "growing number of both search and non-search ads are also behaviourally targeted").

Suppose the search engine provides a mapping service. The search engine, in collecting users' geo-location data, knows where its users typically walk or drive during the week. When the user searches for restaurants, the search engine can use the geo-location data to recommend restaurants in the immediate vicinity. But the engine may also utilize other personal data to recommend restaurants within the user's price range (based on inferences of where the user lives and shops), and that the user likely would enjoy (based on what the user's friends recommend in the user's social networks). The OECD noted, "data linkage enables 'super-additive' insights, leading to increasing 'returns to scope'. Linked data is a means to contextualize data and thus a source for insights and value that are greater than the sum of its isolated parts (data silos)... diverse data set allows the company to create even more detailed profiles about its users that were not possible with each single service."[68] With more users on the company's platform of services, the company is better able to develop predictive user profiles, target users with sponsored and organic search results, and use behavioral ads to reach users via the platform's different channels.

This leads to a correlation between loyalty and quality. With more loyal users on the platform, the search engine is better able to learn about user preferences and thus improve the relevance and quality of its results.

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[68] OECD Interim Synthesis Report, *supra* note 66, at 29 (internal citation omitted).

3. Spillover and Snowball Effect

Network effects on the free side can spill over to the paid side, and each can reinforce the other. "The reuse of data generates huge returns to scale and scope which lead to positive feedback loops in favour of the business on one side of the market, which in turn reinforces success in the other side(s) of the market."[69] The inflow of many users with heterogeneous search inquiries will attract a greater variety of advertisers to the platform.[70]

This phenomenon is not unique to online search engines. As more people watch the Super Bowl or World Cup, for example, more advertisers become interested in the programs' viewership. The same applies to newspapers and newsweeklies. But unlike television shows and print media, search engines can engage in advanced behavioral advertising, potentially yielding significant value for advertisers.[71]

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69 *Id.* at 29; *see also* Vecchi, Vidal & Fallenius, *supra* note 29, at 46 (noting that the search business "is subject to network effects in that scale can improve the quality of the search results and the quality of the matching of the ads with the queries").

70 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 157 (stating that all of the advertisers responding to the market investigation highlighted that Google's query volume was one of the main reasons why Google was a "must have" for search advertising campaigns); *id.* at ¶ 163 ("Higher query volume in turn generates ad inventory."); Vecchi, Vidal & Fallenius, *supra* note 29, at 44.

71 As Harbour and Koslov state:

> In online advertising, an advertiser gets the most "bang for its buck" when its ads generate more "click-throughs"—meaning that a user's interest is piqued, and the user completes an action, such as clicking on the ad to pursue more information. The point of traditional, non-behavioural display advertising is a numbers game: it seeks to place a given ad in front of as many eyeballs as possible, figuring that if a certain percent-age of viewers will respond to the ad, more eyeballs will equal more click-throughs. Behavioural advertising takes a more targeted approach. It attempts to place highly relevant ads in front of the *right* sets of eye-balls, to maximise the likelihood of a click-through from each viewer. If the ads are likely to be more effective at attracting customers, an advertiser will pay more to place the ads, which will generate a larger revenue stream for the Web site.

Harbour & Koslov, *supra* note 62, at 781; *see also* PUBLIC CITIZEN, MISSION CREEP-Y: GOOGLE IS QUIETLY BECOMING ONE OF THE NATION'S MOST POWERFUL POLITICAL FORCES WHILE EXPANDING ITS INFORMATION-COLLECTION EMPIRE 10 (Nov. 2014) ("The more narrowly and accurately Google can target an ad to a user to match her interests, the more it can charge advertisers for each view or click").

By attracting more users on the free side of its services platform, a company can collect a greater volume and variety of personal data to develop user profiles.[72] The search platform can use the inflow of personal data to better target consumers with specific targeted advertising across its platform of free services – such as sponsored search results, ads in email, and display ads in videos – in the moments that precede a purchasing decision.[73] By targeting users with more relevant ads, the search engine increases its advertising revenue and profits. Moreover, the search engine can target users with these personalized ads across media, such as personal computers, smartphones, tablets, and, soon, household appliances; and across services, such as texts, maps, and video players. This too increases the likelihood of consumers clicking on a relevant sponsored ad – which generates revenue on a cost-per-click basis – or seeing a display ad – which generates revenue on a cost-per-impression basis. As more users are drawn to the platform and the search engine company amasses a greater variety of data, its broad platform can optimize online ad delivery and eventually reduce the advertisers' fixed costs of managing multiple ad campaigns.

Consequently, the above network effects can have a snowball effect: as a search engine generates more advertising revenue, it can offer even more free services,[74] which induces consumers to spend more time on the company's platform, allowing it "to gather even more valuable data about consumer behaviour, and to further improve services, for (new) consumers as well as advertisers (on both sides of the market)."[75]

While the spillover and snowball effects may enhance the position of an already successful search engine, to the possible

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72 *See, e.g.*, *In re* Google Inc., No. 13-MD-02430-LHK, 2013 WL 5423918, at *2 (N.D. Cal. Sept. 26, 2013) (noting that although some Google Apps users, whether through the educational program or the partner program, "did not receive content-based ads," their emails were "nevertheless intercepted to create user profiles").

73 Google 2013 10-K, *supra* note 33, at 25 ("The main focus of our advertising programs is to help businesses reach people in the moments that matter across all devices with smarter ads that are relevant to their intent and context, reflecting our commitment to constantly improve their overall web experience.").

74 OECD Interim Synthesis Report, *supra* note 66, at 29 (noting how these "self-reinforcing effects may increase with the number of applications provided on a platform, e.g. bundling email, messaging, video, music and telephony as increasing returns to scope kicks in and even more information becomes available thanks to data linkage").

75 OECD Interim Synthesis Report, *supra* note 66, at 29; *see also* FTC Staff Report, *supra* note 31, at 76 (discussing this "virtuous cycle" and how it represents a "significant barrier for any potential entrant").

detriment of its competitors, we note that in themselves, these effects are not likely to degrade the quality of the search engine's services. In fact, the quality of search results would likely improve due to these network effects.[76]

II. Reduction of Quality in Search Results

Having explored the three network effects, we consider whether, and the extent to which, these network effects provide a firm with the latitude to intentionally degrade the quality of its search results, and whether the network effects taper off beyond a certain threshold. It is generally accepted that a competitive market environment will "increase quality for a given price or reduce price for a given level of quality."[77] It is also assumed that consumers can factor differences in price and quality into their comparisons of products. Indeed, in many instances these two assumptions hold and a positive correlation between competition and quality exists. However, one may identify instances in which the positive correlation between competition and quality breaks down. Such may be the case when consumers are limited in their ability to accurately assess quality differences, which can be due to external factors

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[76] Policymakers, businesses, and researchers can also benefit from these network effects, in using search data to assess market trends, which the industry calls "nowcasting." *See, e.g.*, *Auction.com Launches Real Estate's First Nowcast – Leverages Industry, Transactional and Google Search Data to Provide Accurate Real-Time Market Intelligence*, AUCTION.COM (Oct. 30, 2014), http://www.auction.com/lp/company-information/press-releases/auction-com-launches-real-estates-first-nowcast-leverages-industry-transactional-and-google-search-data-to-provide-accurate-real-time-market-intelligence [https://perma.cc/N7ZF-QXMP] (noting how this was "the real estate industry's first Nowcast, a new housing report that combines industry data, proprietary company transactional data and publicly available Google Trends data to predict market trends as they are occurring – weeks before the findings of other benchmark studies are released"). The press release cites Google's economist that, "By layering industry-specific transactional data and subject-matter expertise over that search data, organizations such as Auction.com are able to create powerful predictive models for accurately forecasting buying behavior in the present and for the coming months." *Id.*; *see also* Kenneth Cukier & Viktor Mayer-Schönberger, *The Rise of Big Data: How It's Changing the Way We Think About the World*, 92 FOREIGN AFFAIRS 28, 33 (2013) (noting how Google's massive data set of searches, while imperfect, provided strong correlations in near-real time of outbreaks of seasonal flu); University of Warwick, *Adapative "Nowcasting" Key to Accurate Flu Data Trends Using Google Search Terms*, SCIENCEDAILY (Oct. 30, 2014), www.sciencedaily.com/releases/2014/10/141030114853.htm [https://perma.cc/KH8Z-QNAT].

[77] OECD Quality Report, *supra* note 11, at 22, 97.

such as deceptive claims or dispositional factors such as consumer biases or imperfect willpower.[78]

While it is generally expected that the flow of information through advertising and marketing will assist consumers in appraising the quality of a good or service and subsequently determining its value, imperfect information undermines this process. When customers cannot accurately assess the quality of a product or service, a supplier may not be rewarded for improving quality. In these instances, it would be rational for such supplier to divert investment from quality enhancement to other channels. The U.K. competition authority observed, "Imperfect information about quality can be a particularly severe problem for infrequently purchased goods or goods the quality of which cannot be verified even after purchase – so-called 'credence' goods."[79]

The inability to successfully communicate the quality of goods and the resulting disincentive to invest in quality is known as the "lemons problem."[80] Because of the lemons problem, competitive pressure will not always yield greater quality. Rational, profit-maximizing firms may conclude that quality manipulation is an optimal strategy when the cost of improving quality outweighs the corresponding gain.

We explore three necessary conditions for quality degradation in search results: first, the search engine has the ability and economic incentive to degrade quality; second, consumers cannot accurately assess quality; and third, imperfect information flows make it difficult or costly for others to convey to consumers the products' or services' inherent quality differences and to prompt users to switch.

A. Search Engine's Ability and Incentive to Degrade Quality

Consumers and companies are harmed when the search engine intentionally degrades the quality of organic search

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78 Ezrachi & Stucke, *supra* note 7, at 41.

79 OECD Quality Report, *supra* note 11, at 113.

80 Fed. Trade Comm'n v. Winsted Hosiery Co., 258 U.S. 483, 494 (1922) ("The honest manufacturer's business may suffer, not merely through a competitor's deceiving his direct customer, the retailer, but also through the competitor's putting into the hands of the retailer an unlawful instrument, which enables the retailer to increase his own sales of the dishonest goods, thereby lessening the market for the honest product."); George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 495 (1970) (nothing that the cost of dishonesty includes "loss incurred from driving legitimate business out of existence").

results below levels that consumers prefer.[81] In these instances, a search engine can, but intentionally elects not to, provide users with the most relevant results in response to their queries.

In assessing the relevance of results to users' inquiries, the search engine algorithm will identify more relevant results upfront. Users generally avoid navigating to the ninth or tenth page of search results. One 2013 study found that the top listing in Google's organic search results received, on average, 32.5 percent of the traffic, compared to 17.6 percent for the second position, 11.4 percent for third position, 8.1 percent for fourth, and 6.1 percent for fifth.[82] The average traffic continued to decline – the search result that was ranked tenth attracted 2.4 percent of traffic, and the result ranked fifteenth received only 0.4 percent.[83] Another study found, "[s]ites listed on the first Google search results page generate 92% of all traffic from an average search. When moving from page one to two, the traffic dropped by 95%, and by 78% and 58% for the subsequent pages."[84] Given the importance of ranking, search engines can intentionally degrade quality (along the parameter of relevance) in several ways.

A search engine can intentionally degrade quality by providing fewer, and ranking lower, more relevant organic search results. To incentivize users to click on sponsored advertisements or the results of its affiliated business, the engine can rank its sponsored results higher and demote its more relevant, organic results. The European Commission discussed the theoretical "trade off that search platforms appear to face between the incentive to provide relevant organic and paid results."[85] Namely, prioritizing relevant results could lead to the search engine "losing revenues on the advertising side (i.e. less clicks on ads) due to users clicking

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81 For a discussion of some of the adverse welfare effects of intentional search degradation, see Michael Luca et al., *Does Google Content Degrade Google Search? Experimental Evidence* (Harvard Bus. Sch., Working Paper 16-035) (2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2667143 [https://perma.cc/NX45-25GS]. For an overview of the potential adverse welfare effects of dominant online platforms, *see* ARIEL EZRACHI & MAURICE E. STUCKE, VIRTUAL COMPETITION: THE PROMISE AND PERILS OF THE ALGORITHM-DRIVEN ECONOMY (Harvard University Press, forthcoming 2016).

82 *The Value of Google Result Positioning,* CHITIKA (June 12, 2013), https://chitika.com/google-positioning-value [https://perma.cc/7727-KRSZ].

83 *Id.*

84 *Id.*

85 Vecchi, Vidal & Fallenius, *supra* note 29, at 47 n.13.

predominantly on the organic side (especially if both types of clicks would bring the user to the same kind of information)."[86]

Under a "hold-up" scenario, the search engine could lower the ranking of potential advertisers appearing in the organic search to pressure the businesses to advertise with the search engine. Advertisers would bid for keywords to get the attention of viewers who do not scroll down the list of search results.[87] As the search engine expands to other services, such as offering a vertical search for shopping or restaurant reviews, it may "alter the ranking of the organic search results such that, from the user's perspective, firms offering competing products to the sponsored links are given a less-than-optimal ranking on the organic side."[88]

Search engines can also intentionally degrade quality by mingling relevant organic results with less relevant sponsored results.[89] The engine might provide relevant restaurant information, for example, but promote the reviews from its affiliated online review service and bury the reviews from a competitor's more robust sample.

This intentional degradation of quality can hurt consumers through higher search costs (in having to spend more time to find the relevant result), less relevant results (when under the hold-up scenario companies refuse to advertise), and less innovation (when companies know that however good their products or services, they will be unable to effectively reach consumers online). Given the importance of search engines as a gateway to the Internet, intentional search degradation can also chill the marketplace of ideas.[90]

Beyond having the ability to degrade the quality of search results, search engines must also have the incentive to do so. A

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86 *Id.*

87 MARTIN CAVE & HOWARD WILLIAMS, THE PERILS OF DOMINANCE: EXPLORING THE ECONOMICS OF SEARCH IN THE INFORMATION SOCIETY 8 (2011).

88 *See, e.g.*, Amelio & Magos, *supra* note 18 ("For instance, instead of displaying links to additional merchants in the organic search results, search engines could display links to 'informational' sites or placing the links winning the auctions also in prominent positions in the organic search results, in order to decrease substitution between organic and paid searches."); FTC Staff Report, *supra* note 31, at 92 (stating that "Google's threat (and willingness) to degrade its own web search product—by banishing high-quality vertical websites from its web search results altogether—suggests that Google's motive in scraping high-quality content from its vertical competitors was not pro-competitive").

89 *See, e.g.*, FTC Staff Report, *supra* note 31, at 24 (noting that "Google's Universal Search results often were not labeled as being provided by Google affiliated services, but were integrated directly into the search results").

90 Maurice E. Stucke & Allen P. Grunes, *Antitrust and the Marketplace of Ideas*, 69 ANTITRUST L.J. 249 (2001).

search engine is interested in increasing usage on both the advertiser and user sides of the market, particularly given the network effects discussed in Part I.[91] The balance is essential. If a search engine attracts many users, but few advertisers, the number of relevant sponsored ads is insufficient, leading to less clicks and less revenue for the search engine. In the opposite situation, where advertisers far outnumber users, the quality of organic search results will suffer, due to less trial-and-error and less personal data. The few users in this scenario may actually find the less relevant sponsored ads off-putting. By maximizing both the number of users/search queries and advertisers/sponsored search results, the search engine will benefit from network effects.

However, revenues and profits come mostly from one side of the market. Search engines have an economic incentive to maximize the likelihood that its consumers will click on sponsored advertisements. Clicking a sponsored search result does not necessarily harm the consumer if he or she finds the sponsored search result helpful. No one would begrudge the search engine earning revenue for helping match the advertiser with the search engine user.

1. Returns to Scale and Scope

An important variable concerning the search engine's incentive to intentionally degrade quality involves returns to scale and scope. Although search engines can degrade quality, the network effects discussed in Part I may lessen an engine's incentive or ability to do so. The OECD found non-linear, increasing returns to scale as an engine's number of searches and collection of personal data expanded.[92] But returns to scale and scope may level off at a certain point. Say that Google, Yahoo!, and Bing have a relative advantage over a new entrant, like Apple, as to providing relevant search results.

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91 To benefit from these network effects, and the subsequent advertising revenue, search engines, as the European Commission found, "will try to attract as many participants on both sides of the platform as possible." Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 48.

92 OECD Interim Synthesis Report, *supra* note 66, at 29; ORG. FOR ECON. CO-OPERATION AND DEV, SUPPORTING INVESTMENT IN KNOWLEDGE CAPITAL, GROWTH AND INNOVATION 171 (Oct. 10, 2013), http://dx.doi.org /10.1787/9789264193307-en [https://perma.cc/KQ5E-86VZ] ("Supply-side economies of scale may also occur in digital markets, most notably in the context of search engines, where increased data from users allows for the development of more accurate search algorithms."); Org. for Econ. Co-operation and Dev., *Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value* (OECD Digital Economy Papers No. 220), at 34 (2013), http://dx.doi.org/10.1787/5k486qtxldmq-en [https://perma.cc/39R4-WWAF].

That advantage, and thus these players' market power, could disappear as soon as Apple averages 10,000 daily inquiries in those locales. In that case, neither Google, Yahoo!, nor Bing would have the incentive to unilaterally degrade quality. Competition would serve as an effective check.

Now suppose two search engines attract a random cross-section of the population; one has five million daily searches and the other five billion. Suppose one percent of the daily searches involve a hot topic. The smaller search engine has 50,000 searches with which to experiment, the larger 50 million. While the larger search engine might do a better job identifying and ranking the second or third tier of results for the hot topic, both search engines have a sufficiently large sample to identify the most relevant, popular results. However, the results are different for esoteric search queries ("tail queries"). Suppose a search, such as *"law and economics professors" and NCAA*, averages one per 10 million searches. The smaller search engine will get one search every two days while the larger search engine gets 500 queries per day. If tail queries make up a significant component of daily searches, then the larger search engine will enjoy an inherent advantage. Averaging five billion searches per day, leading search engines are likely to provide more relevant results across the board (from long tail to popular queries) than a smaller search engine, even those averaging five million searches per day. The larger search engine's results will continually improve as more people use it, but the incremental benefits from scale (increase in relevance) will taper off as the sample size approaches all users.

Thus, a search engine's incentive and ability to degrade quality will depend on whether the company is at a relative advantage or disadvantage in scale compared with other search engines. Microsoft and Yahoo! advanced this argument to the European Commission to justify their 10-year partnership. Microsoft would control the online web-wide algorithmic search and search-advertising business of Yahoo!. The companies argued that they needed to attain greater scale in order to produce more relevant search results and effectively compete against industry leader Google. Microsoft and Yahoo! asserted that an increase in the number of queries and users would lessen Microsoft's and Yahoo!'s incentive to shade quality.[93]

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[93] Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶¶ 211-13. Moreover, Microsoft argued that the structure of its transaction with Yahoo provided "a large incentive to innovate on the search experience because, according to the definitive Agreements, the publishing businesses of Microsoft and Yahoo will remain separate, and the revenue attributable to either Yahoo or Microsoft depends on the

This argument, of course, assumes that the benefits from scale have not already levelled off for Microsoft and Yahoo. For if Microsoft, Yahoo, and Google were all operating at or above the minimum efficient scale for search queries and using similar-enough algorithms, then the quality of their search results should be roughly similar. If this were the case, quality degradation could still occur, simply along the lines of tacit collusion. Each search engine could monitor the other, following the quality degradation of the next-worst player.

The U.S. Department of Justice (DOJ) accepted that the benefits from scale might enable a combined Microsoft/Yahoo to better compete against the dominant search engine, commenting that the transaction would "enhance Microsoft's competitive performance because it will have access to a larger set of queries, which should accelerate the automated learning of Microsoft's search and paid search algorithms and enhance Microsoft's ability to serve more relevant search results and paid search listings, particularly with respect to rare or 'tail' queries."[94] With this larger pool of data, Microsoft could provide a higher quality product. The DOJ believed that Microsoft's "enhanced performance, if realized, should exert correspondingly greater competitive pressure in the marketplace."[95]

The European Commission also found scale to be an important factor to effectively compete,[96] with a caveat: while Google "appears to perform better in terms of relevance especially for [...] queries, this does not provide evidence that scale leads to higher relevance for users, since the above studies do not take into account the technology of the different search engine which are not related to scale."[97]

The Commission found from the empirical studies Microsoft submitted that a search platform's revenue per search

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source of the search query." *Id.* at ¶ 208. Yahoo and Microsoft would only earn revenue from ads that appear on their respective websites (and those of their publisher affiliates), so each would have a strong incentive to attract users to their own entry points. *Id.*

94 Press Release, U.S. Dep't of Justice, Statement of the Department of Justice Antitrust Division on Its Decision to Close Its Investigation of the Internet Search and Paid Search Advertising Agreement Between Microsoft Corporation and Yahoo! Inc. (Feb. 18, 2010), http://www.justice.gov/atr/public/press_releases/2010/255377.pdf [https://perma.cc/C4C3-KR9B].

95 *Id.*

96 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 153; Vecchi, Vidal & Fallenius, *supra* note 29, at 46 (noting that EC's market investigation "confirmed that scale is an important aspect in the economics of the industry"); *see also id.* at 47.

97 COMP/M. 5727—Microsoft/Yahoo!, at ¶ 168.

increased with the volume of search queries.[98] Competitors that responded to the Commission's market investigation indicated "almost unanimously that scale is important in order to be an effective competitor in search advertising,"[99] and that "Microsoft did not have enough traffic to compete effectively with Google."[100] Google disagreed, arguing, "[scale's] degree of importance has been largely overstated."[101] The Commission did not elaborate, but noted that Google acknowledged "the value of incremental data decreases as the amount of data increases."[102] The issues of when that happens and for which types of searches, and the quality differential this might create, were left unresolved.[103]

Even when effects of scale taper off, search engines can still have a relative advantage in scope by offering users more personalized search results. To the extent users are attracted to one search engine, even after scale and scope effects taper off, the search engine benefits from being the "must use" option for advertisers. This leads to the inclusion of more personalized ads.

Accordingly, the largest search engine, even with multiple competitors, could use its significant advantage in scale and scope to degrade quality on the free side and increase its market power or profits. A larger search engine could intentionally degrade the quality of its search results by a small but significant amount, and still produce better search results than its smaller rivals due to network effects. This might involve, for example, the search engine promoting its own restaurant review site (which has on average far fewer

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98 *Id.* at ¶ 169.

99 *Id.* at ¶ 173.

100 Vecchi, Vidal & Fallenius, *supra* note 29, at 46.

101 COMP/M. 5727—Microsoft/Yahoo!, at ¶ 174.

102 *Id.* at ¶ 174.

103 In discussing the "scale curve," the FTC also noted the dispute. Google acknowledged "the importance of scale in the abstract." FTC Staff Report, *supra* note 31, at 16. Its internal documents were "replete with references to the 'virtuous cycle' among users, advertisers, and publishers." *Id.* Its executives, however, testified of diminishing returns from scale, and that Google has "enough users already that more users don't make it much better." *Id.* at 124 n.77 (quoting Schmidt). Google also argued that "Bing's query and advertiser volume have passed the point at which scale should – or would – matter significantly to Microsoft, and that any volume gains made by Bing would yield minimal improvements in either Bing's search quality or its monetization ability." *Id.* at 16. Microsoft agreed that there were generally diminishing returns to scale. *Id.* So the "main bone of contention between Google and Microsoft is *where on this scale curve* Microsoft currently operates. This is an important question, but one which evades easy answers. This is, in part, because neither party can identify a fixed number of queries or ads that constitutes the 'minimum efficient' point of operation." *Id.*

reviewers and reviews per restaurant) over a competing site (which has a larger, more robust sample size, with far more reviewers and reviews).[104] Using these tactics, Google could shade its search results to a greater extent than the smallest search engine, DuckDuckGo.

2. Disincentives to Degrading Quality

Conversely, smaller search engines will have less incentive (or ability) to degrade quality. The quality of their search results is already relatively inferior, given the scale at which they operate, the scope of data they collect, and the number and diversity of advertisers. Further degrading their search results risks losing their small pool of users. Unless a smaller search engine differentiates its services to such a degree that it no longer competes based on quality of search results, the smaller search engine will have less incentive and ability to intentionally degrade quality.

But even a dominant search engine will have a disincentive to skew search quality when the practice reduces profits. Even the dominant search engine cannot afford to provide too many irrelevant sponsored ads; if users do not click the ads, the engine does not generate income. As it provides more irrelevant sponsored results, the engine risks conditioning consumers to ignore sponsored ads, or inducing them to switch to other search engines. Advertisers themselves can serve as a check and limit the extent to which search engines degrade quality on the free side. An advertiser associated with an engine that bombards users with irrelevant ads may feel the value of its brand degrading by association. These advertisers may then turn to other advertising venues.[105] Moreover, the dominant search engine would still need to invest in improving its search algorithms. As the European Commission found, search engines "not only try to develop new services (leap-frog innovation) but also constantly strive to innovate incrementally on existent services in order to be able to deliver better services to both advertisers and users."[106]

With the exception of these limited checks, the dominant search engine can afford to degrade quality in the face of competition. It enjoys a relative quality advantage from network effects over its smaller search engine rivals. Despite the potential consequences of excessive degradation, certain levels of quality degradation could actually lead to an increase in the dominant engine's profits and market power.

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104 *See* Luca et al., *supra* note 81, at 26-27.

105 *See* Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 204.

106 *Id.* at ¶ 109.

B. Consumers' Ability to Accurately Assess Quality Differences

Even when search engines have the ability and economic incentive to degrade the quality of their search results, they will not do so where consumers are likely to perceive such quality degradation and punish the platform by switching to rival search engines.

Microsoft and Yahoo, for example, argued to the Commission that they could not degrade the quality of their search engine results, given Google's presence.[107] In addition, Microsoft asserted, "the search industry is closely monitored by industry participants and opinion leaders . . . Microsoft therefore claims that it cannot run the risk of even small degradations in quality, as users will become aware and switch to Google."[108] But this argument assumes that consumers can detect quality degradation.

In effect, Microsoft's argument is a tautology: by claiming that search engines cannot degrade quality without consumers noticing, Microsoft can point to consumers who do not (or cannot) perceive quality degradation as proof that search engines are operating properly.

Search engine users undoubtedly can detect significant quality degradations, such as completely unrelated results (such as information about telephones coming up in a search for tennis shoes) and inaccurate results to straightforward, fact-based queries (such as the search query "how many kilometers in a mile").

A more complex scenario involves the comparative relevance of organic and sponsored search results. Here the quality of search results is relative. First, it is relative across time. Search results can improve in quality as, among other things, more people use the search engine. Second, quality is relative to the amount of relevant information available online. As more information (such as books) is brought online and more online material becomes searchable, a search engine will become increasingly able to identify relevant information. Thus, a smaller search engine may produce better quality search results today than Yahoo! or Google did ten years ago. Third, the quality of one search engine's results is relative to the contemporaneous results of other search engines. Smaller search engines may identify more relevant results for popular,

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107 *Id.* at ¶ 212 ("[U]sers, according to the notifying party, notice inferior (i.e. less relevant) search results and given the strong presence of Google in the market they would direct their queries back to Google lowering user engagement in Microsoft's platform.").

108 *Id.*

straightforward search queries than for long tail queries (which might arise once every million searches). Fourth, while the results for some straightforward fact inquiries remain constant, other queries and results can vary daily or weekly. So the user expects the most relevant results (which can change daily), not necessarily the same results they received yesterday or last year.

Thus, aside from fact inquiries, consumers will likely assess the quality of search results not on some objective or ideal benchmark, but instead relative to what other search engines offer. To notice quality degradation, users must run the same search query, around the same time, on different search engines.

1. The First Theorized Check on Quality Degradation: Multi-Homing

Nothing prevents consumers from multi-homing searches, and yet consumers infrequently make the same inquiry on multiple search engines. As the European Commission found in its investigation, "[t]he very limited share of user multi-homing between Microsoft and Yahoo shows that users rarely run checks between these two platforms."[109] Yahoo users' second choice was Google,[110] and the Commission confirmed the parties' figures that the "vast majority of users 'single-homed' on Google."[111]

Moreover, U.S. and E.U. market shares do not reflect significant multi-homing. If users were frequently running the same searches on Google, Bing, Yahoo!, and DuckDuckGo, each competitor would control approximately 25 percent of the search market. In May 2015, Google continued to lead the U.S. "explicit core search market" for desktop searches with a 64.1 percent market share, followed by Microsoft Sites with 20.3 percent, Yahoo Sites with 12.7 percent, Ask Network with 1.8 percent and AOL, Inc. with 1.2 percent.[112] Google has a greater

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109 *Id.* at ¶ 221; *see also* Vecchi, Vidal & Fallenius, *supra* note 29, at 44 (noting the Commission finding that "users tend to 'single-home,' meaning that they perform over 90% of their search queries within a month on one single search engine").

110 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 224.

111 Vecchi, Vidal & Fallenius, *supra* note 29, at 46; *see also* COMP/M. 5727—Microsoft/Yahoo!, at ¶ 102, 103.

112 Adam Lella, *comScore Releases May 2015 U.S. Desktop Search Engine Rankings*, COMSCORE (June 16, 2015), http://www.comscore.com/Insights/Market-Rankings/comScore-Releases-May-2015-US-Desktop-Search-Engine-Rankings [https://perma.cc/EC52-GG2S].

share of search inquiries on U.S. mobile phones and tablets.[113] In Europe, Google has an even larger share of the search market. In 2013, the Commission observed how Google "has been holding market shares in web search well above 90% in most European countries for several years now, a level which is higher than in many other parts of the world."[114]

2. The Second Theorized Check on Quality Degradation: Spot-Checking

Besides multi-homing, consumers can attempt to assess the relative quality of search results by "spot-checking," i.e., occasionally running the same search query on other search engines. As the European Commission stated, the "mere presence of an alternative check may suffice to induce the search engines to enhance the relevance of their organic search."[115]

Several problems exist with the theory that spot-checking will prevent quality degradation. First, it is unclear how frequently consumers actually spot-check (and whether they randomly spot-check or are likelier to spot-check for certain categories of search inquiries or at certain times). For example, one survey asked search users "what they would do if a Google search result did not contain the expected information."[116] 34 percent of respondents indicated they would "return to the search results page and try a different result," and 25 percent said they would "return to Google to enter a new search."[117] No respondents answered that they would try another search engine. These results may suggest that users perceive the "switching costs" between search providers (or, alternatively, the "costs of spot-checks") as higher than the expected benefit of spot-checking.

Even if consumers spot-check, a larger search engine can still intentionally degrade quality by a small, but significant,

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113 *Top 5 Mobile & Tablet Search Engines in United States from June 2014 to May 2015*, STATCOUNTER GLOBAL STATS, http://gs.statcounter.com/#mobile+tablet-search_engine-US-monthly-201406-201505 [https://perma.cc/WM4B-HQBL] (In May 2015, Google had an 86.48 percent share, with Yahoo (7.89 percent) and Microsoft (4.99 percent) trailing behind).

114 European Commission, Memo: Commission seeks feedback on commitments offered by Google to address competition concerns – questions and answers (Apr. 23, 2013), http://europa.eu/rapid/press-release_MEMO-13-383_en.htm.

115 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at 221 n.71.

116 Amy Gesenhues, *Study: Top Reason a User Would Block a Site From a Search? Too Many Ads*, SEARCH ENGINE LAND (Apr. 15, 2013), http://searchengineland.com/?p=155708 [https://perma.cc/6P59-GF56].

117 *Id.*

amount. Spot-checking may serve to keep smaller search engines in check, but is unlikely to make a difference on large search engines due to network effects. To illustrate, suppose an individual generally runs 100 searches per week on Google, one weekly quality check on Bing, and one monthly quality check on DuckDuckGo. At the end of the year, Google would have 5200 searches, compared to Bing's 52 searches and DuckDuckGo's 12 searches. Google, with its larger user platform, would continue to attract more advertisers and have more advertising revenue. With more search queries, Google could intentionally degrade quality while still offering more relevant organic search results and more relevant sponsored search results than both Bing and DuckDuckGo. Despite spot-checks, Google would be able to simultaneously degrade quality and maintain its quality advantage over other engines due to network effects.

Spot-check comparisons become even less effective when applied to personalized search results. If a consumer not only uses the platform's search engine, but also its email, mapping services, and other offerings, comparisons with other search engines that do not have the user's data become much harder. Spot-checking also becomes less feasible with greater differentiation among the search engines. For example, a smaller search engine may differentiate its services on some other parameter of quality. DuckDuckGo, for example, highlights its superior privacy protections, using the tag line "The search engine that doesn't track you."[118]

Another problem with the spot-check theory is that consumers would have to factor in whether their query is long-tail or popular in order to reach an accurate conclusion on the relative quality of a search engine's results. Rather than try to ascertain which search engine does better for which type of inquiry, the user may simply opt for the one that does a better job *overall*.[119]

Consequently, even with consumers' spot-checking, larger search engines can intentionally degrade quality, while smaller search engines, given their quality disadvantages, cannot. A consumer cannot discern the extent to which the dominant

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118 DUCKDUCKGO, https://duckduckgo.com [https://perma.cc/8FG4-ZKH5].

119 FTC Staff Report, *supra* note 31, at 66 ("In effect, users are habituated into using Google for all their queries because of its comprehensive scope, and so they may be more likely to tum to Google when they have commercial queries, instead of starting at a vertical website. [Google's Eric] Schmidt's testimony is corroborated by the representations of several of the vertical search firms, who note that they are dependent on horizontal search providers for significant amounts of their traffic, because even many vertical search users tend to begin their search with a query on Google, Bing or Yahoo!.").

search engine has degraded quality, only that the larger search engine generally produces somewhat better results across all searches.

3. Branding as a Substitute for Quality

The discussion thus far highlights the difficulties for *rational* consumers to objectively measure quality differences and detect deteriorations in search quality. However, economic literature has shown that consumers are not necessarily rational, self-interested profit-maximizers with willpower. In making decisions, consumers may be swayed by imperfect indicia of quality. For example, some consumers believe that price is correlated with quality, which is not always true.[120] However, because searching is free, these price effects are absent. Instead, branding can affect consumers' perceptions of quality.

Studies confirm the powerful effect of the Google brand in particular. SurveyMonkey administered a test whereby respondents were presented with two search result pages, one with a page header labeled "Google" and the other with a page header labeled "Bing." Respondents were asked which results they preferred. Curiously, when the header labels were swapped, more users preferred the "Google" labeled search results.[121]

Similarly, the European Commission found that search engine users were unaware of Google's systematic favoring of its own comparison-shopping product in its general search results pages.[122] Due to the quality boost that comes from scale, network, and branding effects, consumers do not notice when a leading search engine degrades quality in small but significant ways.

C. Imperfect Information Flows

Although search engines do have an incentive and ability to intentionally degrade the quality of search results, as well as a user-base that would not be able to notice, search engines run the risk that a rival could notify consumers of the quality degradation. The third variable of our framework concerns

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120 *See* DAN ARIELY, PREDICTABLY IRRATIONAL: THE HIDDEN FORCES THAT SHAPE OUR DECISIONS 181-86 (2008).

121 Gesenhues, *supra* note 117; *see also* FTC Staff Report, *supra* note 31, at 66.

122 European Commission Press Release IP/14/116, Antitrust: Commission Obtains From Google Comparable Display of Specialised Search Rivals, (Feb. 5, 2014), http://europa.eu/rapid/press-release_IP-14-116_en.htm [https://perma.cc/SJ98-4HUU].

imperfect information flows that make it difficult or costly for these rivals to convey to consumers the search engines' inherent quality differences and induce consumers to switch. Quality degradation is feasible when companies recognize that neither they nor their competitors can easily or inexpensively communicate this information to consumers and get them to switch.

Both businesses harmed by search degradation and rival search engines have the incentive to alert consumers of quality degradation. For businesses, the degradation in search quality can affect their ability to compete. Given the importance of general search engines in directing traffic to their site, many businesses are sensitive to their site's ranking in search results. When a search engine artificially diverts traffic away from their website, they may immediately feel the decline in traffic and loss of business. Rival search engines are motivated by network effects. Adding a user means better search results, which can attract more users and advertisers. If consumers do not multi-home search, then the contest for users can become zero-sum: every search query on Bing or Yahoo! makes it less likely that consumers will search on Google, narrowing the gap between the competitors, and thus tapering the leading search engine's advantage from network effects. Companies also have the incentive to inform competition authorities, such as the DOJ, FTC and European Commission.

Rival search engines have alerted consumers to their superior quality. Microsoft, for example, advertised its quality advantage over Google with its "Bing-it-on challenge." Microsoft asked users to take a blind test, where users select five search queries, and choose which results (Google's or Bing's) they favor.[123] In blind tests, according to Microsoft, more U.K. residents preferred Bing's search results to Google's.[124] Despite this advertising campaign, however, U.K. residents still overwhelmingly use Google.[125] Even if search

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[123] For an explanation and critique of this advertisement campaign, *see* Ian Ayres, Emad Atiq, Sheng Li, Michelle Lu, Tom Maher & Christine Tsang, *A Randomized Experiment Assessing the Accuracy of Microsoft's "Bing It On" Challenge*, 26 LOY. CONSUMER L. REV. 1 (2013).

[124] Bing blogs, *Going Head-to-Head - And Why Online Searching Has Changed Forever* (Apr. 29, 2014), https://blogs.bing.com/uk/2014/04/29/going-head-to-head-and-why-online-searching-has-changed-forever [https://perma.cc/4MA4-Q5MX] (noting that "[d]espite having used Google's own top queries, after carrying out 10 searches, 46% of people surveyed picked Bing search results more often, 37% of people picked Google results more often, and 17% of people chose Bing and Google results an equal number of times").

[125] *Search Engine Market*, TheEWord http://theeword.co.uk/info/search_engine_market [https://perma.cc/LF43-A8MY].

engines tell consumers of a rival's degradation of search results, they still need to convince those users to switch.

Why does Google still dominate by such a margin in search results in the U.K.? One possibility is that Microsoft's sample does not reflect the U.K. Internet-user population. A second possibility is that Bing outperforms Google on some searches (such as popular searches) but not other inquiries (such as long-tail queries), where Google's scale comes into play.[126] Alternatively, the distinction between objective and perceived quality may explain the discrepancy.[127] A fourth possibility may be linked to the benefit of loyalty and customized search results based on user profiles. This consideration may be further amplified due to status quo bias.

1. Status Quo Bias: The Power of Defaults

At times, consumers, as the European Commission discussed, will stick with a default option even when a superior alternative exists.[128] Status quo bias arose in a Commission case involving Microsoft's Windows Media Player.[129] Pre-installing software on a large number of smartphones may make it less likely that consumers will switch to alternatives.[130] As the U.K. competition authority discussed in its Google/Waze decision, integrating the pre-installed application with other functions on the platform may further consumer entrenchment.[131] Thus, another confounding variable is the search engine's ability to use status quo bias to degrade quality, including less-visible proxies for quality such as privacy protections. The search engine can, for example, collect more personal data and provide less privacy protection for the data, than consumers would otherwise prefer.

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126 For a criticism of the Bing results, *see* Ian Ayres et al., *A Randomized Experiment Assessing the Accuracy of Microsoft's "Bing It On" Challenge Claims*, ISLANDIA (2013), http://islandia.law.yale.edu/ayres/BingItOn_Draft%209.pdf [https://perma.cc/K3TT-7URN]. For Microsoft's response, *see* Matt Wallaert, *Challenging the Challenge to the Bing It On Challenge*, BING BLOGS (Oct. 2, 2013), http://blogs.bing.com/search/2013/10/02/challenging-the-challenge-to-the-bing-it-on-challenge [https://perma.cc/5CLR-FYGW].

127 *See supra* Part II B.3.

128 For the importance of default options generally, see RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS (2008).

129 Eur. Comm'n Case No. COMP/C-3/39.530—*Microsoft (tying)* (Dec.16, 2009); Maurice E. Stucke, *Behavioral Antitrust and Monopolization*, 8 J. COMPETITION L. & ECON. 545 (2012).

130 Eur. Comm'n Case No. COMP/M. 7217—Facebook/WhatsApp (Oct. 3, 2014) (C 7239) 24-25, at ¶¶111, 124 (discussing status quo bias).

131 Office of Fair Trading, Completed Acquisition by Motorola Mobility (Google, Inc.) of Waze Mobile Ltd., ME/6167/13, at ¶¶ 57-61 (Dec. 17, 2013).

While Google is already the leader in search queries in the United States on personal computers, its dominance significantly increases on mobile devices. Google has a 64 percent market share on personal computers versus 86 percent share on mobile phones and tablets. One explanation may be that preferences or users differ between the two platforms. A likelier explanation is status quo bias, as Google is the default search engine for both the Apple and Android mobile operating systems.

The Firefox/Yahoo case reflects the power of defaults. After Firefox, an Internet browser, made Yahoo! its default search engine, Yahoo's share grew from 8.6 percent in November 2014 to 10.9 percent of the U.S. search market in January 2015 – its highest share in the past five years.[132] It appeared that this growth was attributable to Firefox. When Firefox users were separated out from Yahoo's overall share, Yahoo's remaining share was reportedly "flat or down slightly vs. last month."[133] Many Firefox users had previously used Google. After Firefox changed its default search engine, Google sought to persuade Firefox users to return to Google. Despite Google's efforts, many Firefox users stuck with the new default engine, Yahoo!.[134]

Search engines recognize the value of being the default search engine on a browser, and pay the browser for this right.[135] Google, for example, is the default engine on Apple's Safari Internet browser. In exchange, Google reportedly paid

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132 Greg Sterling, *Firefox Deal Continues To Boost Yahoo As US Search Share Grows Again In January*, SEARCH ENGINE LAND (Feb. 2, 2015), http://searchengineland.com/firefox-deal-continues-boost-yahoo-us-search-share-grows-january-213998 [https://perma.cc/HB2N-XW27].

133 *Id.*

134 "StatCounter CEO Aodhan Cullen posted, 'Some analysts expected Yahoo to fall in January as a result of Firefox users switching back to Google. In fact Yahoo has increased US search share by half a percentage point.'" Greg Sterling, *Firefox Deal Continues To Boost Yahoo as US Search Share Grows Again in January*, SEARCH ENGINE LAND (Feb. 2, 2015), http://searchengineland.com/firefox-deal-continues-boost-yahoo-us-search-share-grows-january-213998 [https://perma.cc/P4DU-44PC]; Gregg Keizer, *Yahoo Loses Some U.S. Share Gained from Firefox Deal*, COMPUTERWORLD (Apr. 17, 2015), http://www.computerworld.com/article/2911108/yahoo-loses-some-us-share-gained-from-firefox-deal.html [https://perma.cc/G3LQ-3YUT] (noting that after a January 2015 peak of 13 per cent, Yahoo's search share in February only dropped to 12.8 per cent, and in March to 12.7 per cent).

135 *See* Greg Sterling, *As Apple-Google Deal Expires, Who Will Win the Safari Default Search Business?*, SEARCH ENGINE LAND (Feb. 5, 2015) http://searchengineland.com/apple-google-deal-expires-will-win-safari-default-search-business-214277 [https://perma.cc/Y7AM-MBJF].

Apple "$82 million in 2009, and $1 billion in 2013"[136] and 2014.[137] Defaults matter.

The battle over search may soon become the battle over the default option, as inertia may trump quality differences among the search engines. Search engines, in order to maintain or grow their respective market shares, will compete to control the key entry points for search. This includes, as the Firefox and Safari deals show, being the default search engine on an Internet browser, as well as entering into syndication agreements with third-party websites.[138]

Given the significant revenue stakes in capturing search advertising markets, the battle over the default will lead to search engines capturing and replacing key entry points (such as Internet browser home pages) with their own products. Search engines have the incentive to develop and promote their own Internet browsers (such as Google's Chrome and Microsoft's Internet Explorer) and operating systems (such as Google's Android for mobile and Microsoft's Windows for mobile and personal computers).[139] To the extent to which the search

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136 *Apple Working on Its Own Search Engine; Aims To Take on Google: Report*, IBN LIVE (Feb. 10, 2015), http://ibnlive.in.com/news/apple-working-on-its-own-search-engine-aims-to-take-on-google-report/527597-11.html [https://perma.cc/8NQF-JBKH].

137 Joel Rosenblatt & Adam Satariano, *Google Paid Apple $1 Billion to Keep Search Bar on iPhone*, BLOOMBERG, Jan. 21, 2016, http://www.bloomberg.com/news/articles/2016-01-22/google-paid-apple-1-billion-to-keep-search-bar-on-iphone [https://perma.cc/UNG2-MACV].

138 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶ 51.

139 According to one report, Google's Mobile Application Distribution Agreement requires the following from mobile phone manufacturers:

> Devices may only be distributed if all Google Applications [listed elsewhere in the agreement] . . . are pre-installed on the Device.
>
> The phone manufacturer must "preload all Google Applications approved in the applicable Territory ... on each device."
>
> The phone manufacturer must place "Google's Search and the Android Market Client icon [Google Play] . . . at least on the panel immediately adjacent to the Default Home Screen," with "all other Google Applications ... no more than one level below the Phone Top."
>
> The phone manufacturer must set "Google Search ... as the default search provider for all Web search access points."
>
> Google's Network Location Provider service must be preloaded and the default. These provisions are confidential and are not ordinarily available to the public. MADA provision 6.1 prohibits a phone manufacturer from sharing any Confidential Information (as defined), and Google labels the MADA documents as "Confidential" which makes the MADA subject to this restriction.

engine is the default option and integrated with the operating system, the battle for search may be the battle for the dominant browser and operating system, especially on mobile phones, where search is increasingly occurring.[140] This further raises the entry barriers to the search market and the costs of expanding in this market.[141]

Status quo bias has important implications for search quality and competition. The likelihood of anticompetitive quality degradation increases when: (1) a search engine controls the essential portals to search (including the mobile operating system or Internet browser); (2) the search engine controls and limits the portability of data so that users cannot export their search and other personal data to rival engines (thereby helping the search engine provide more relevant results); and (3) the parties' applications are pre-installed on a large base of mobile phones, tablets, or personal computers, so that "status quo bias" affects consumers' choices.[142]

Although consumers can perceive differences in quality between search engines when confronted with side-by-side comparisons in blind tests, it is not altogether clear that consumers, even with direct "Bing-it-on" quality challenges, act upon quality differences in real life. If many consumers stick with the default option, then rival search engines using Bing-it-on and other such direct comparisons of quality will be unable to overcome users' status quo bias. The search engine that becomes the default option on most "entry points" for search (such as the Internet browser) will attain the most users and attract the most advertisers. This allows the dominant search engine to intentionally degrade quality, by a small, but significant amount, with minimal fear of backlash.

CONCLUSION

Quality is a fundamental aspect of competition and a key non-price consideration in consumer decision-making. It seems to follow that quality would be the prime variable affecting usage of free goods, including search engines. The European Commission in the Microsoft/Yahoo venture considered the

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Benjamin Edelman, *Secret Ties in Google's "Open" Android*, BENJAMIN EDELMAN (Feb. 13, 2014), http://www.benedelman.org/news/021314-1.html [https://perma.cc/V2G7-HJMC].

140 Joshua Barrie, *People are Turning Away from Google Search*, BUSINESS INSIDER (Feb. 3, 2015), http://uk.businessinsider.com/google-search-share-below-75-2015-2 [https://perma.cc/78XL-BGTE].

141 Case No. COMP/M. 5727—Microsoft/Yahoo!, at ¶ 111 (noting that entry barriers "appear to be high").

142 Eur. Comm'n Case No. COMP/M. 7217—Facebook/WhatsApp (Oct. 3, 2014) (C 7239) 24-25, at ¶ 134.

joint venture's degradation of quality of Internet search results as a theory of harm.[143] But the Commission assumed that competition could prevent such degradation of quality.[144]

As we have shown, under several conditions a search engine may have the incentive and ability to degrade the quality of its search results to the detriment of consumers. Quality degradation may be small, yet significant. If given the option, consumers would prefer different, more relevant results, which the search engine opts not to provide. Instead, the search engine intentionally degrades the search quality to earn greater profits or market power. The current state of affairs allows for quality degradation despite competitive pressure.

This leads us to the wider debate over defining a standard – at what point does quality degradation violate competition laws and merit intervention by authorities? One's view on intervention depends on the extent to which the conduct falls within the competition law, one's belief in the ability of markets to correct themselves, and the likely remedies. Even if one favors intervention, identifying the triggering point for intervention and assessing the effectiveness of the remedies may be challenging.[145] The answer depends on several factors, including the context. A merger between two search engines, for example, may substantially lessen competition by enabling a small, but significant, non-transitory degradation in search quality. If the evidence strongly supports this theory, one would expect competition authorities to enjoin the merger. More problematic is if the degradation of quality is solely the unilateral exercise of market power. A major player may intentionally degrade the quality of its search results by a small, but significant, amount. Suppose its quality, due to network effects, is still superior to rivals. Should competition policy condemn such relative degradation? If so, how does one identify the optimal point of intervention?

However, if a company systematically degrades the quality of its search results to attain or maintain a monopoly, it seems

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143 Eur. Comm'n Case No. COMP/M. 5727—Microsoft/Yahoo! (Feb. 18, 2010) (C 1077), at ¶¶ 202-04. The Commission in that case left open whether Internet search constituted a separate market. *Id.* ¶¶ 85-86.

144 Amelio & Magos, *supra* note 18, at 52 ("In summary, the literature suggests that an important role for competition is to induce search engines to provide more relevance.").

145 Understanding why rival search engines do not prevent quality degradation may also help competition authorities with designing remedies. Competition authorities might consider, for example, how search and user data portability might level the playing field, and the use of choice screens (as the Commission did in its Microsoft browser case).

likely that authorities would intervene. As the U.S. Supreme Court has repeated, "*In the absence of any purpose to create or maintain a monopoly*, the [competition law] does not restrict the long recognized right of trader or manufacturer engaged in an entirely private business, freely to exercise his own independent discretion as to parties with whom he will deal."[146] Situations in which a company seeks to consolidate a monopoly merit state intervention, especially where the quality degradation is part of the search engine's plan to leverage its dominance into other markets, thereby causing even greater consumer harm.[147]

Although remedies are outside the scope of our article, our analytical framework can offer some insight. If the misaligned incentives involve the platform favoring its own vertical services, then the competition authority can consider structural remedies, such as requiring the platform to spin off its search engine. Behavioral remedies, including forbidding the search engine from biasing its search results in favor of its own vertical services, could also be effective. This way, the algorithm would identify the most relevant results as if all the sites were independent. If instead the learning-by-doing network effect enables quality degradation, the competition authority can consider the feasibility of data portability remedies. Mechanisms that foster status quo bias, such as long-term agreements granting a search engine default status and the bundling of search engines with operating systems, warrant scrutiny when used by a dominant firm. The European Commission has expressed concerns that Google's Android, among other things, requires "smartphone and tablet manufacturers to exclusively pre-install Google's own applications or services, in particular Google's search engine."[148]

Ultimately, the European Commission's Statement of Objections in the Google case opens the door to wider

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146 Lorain Journal Co. v. United States, 342 U.S. 143, 155 (1951) (quoting United States v. Colgate & Co., 250 U.S. 300, 307 (1919)); *see also* United States v. Bausch & Lomb Co., 321 U.S. 707, 721-723 (1944); Associated Press v. United States, 326 U.S. 1, 15 (1945).

147 We discuss some abuses by dominant online platforms in our submission to the U.K. House of Lords, *Online Platforms and the EU Digital Single Market* (Oct. 16, 2015), http://ssrn.com/abstract=2677267 and http://dx.doi.org/10.2139/ssrn.2677267 [https://perma.cc/2MJU-WK9K].

148 European Commission, Statement by Commissioner Vestager on Antitrust Decisions Concerning Google, *supra* note 17. The Commission will also investigate "the alleged bundling together of certain Google products with other apps and services" and "if Google is hindering the ability of manufacturers of smartphones or tablets, who want to use the Android operating system, from being able to use and develop other open-source versions of Android (so-called 'Android forks')." *Id.*

considerations of consumer welfare and quality. The case signals the growing importance of quality competition as consumers are increasingly offered free goods and services in exchange for their personal data and exposure to behavioral ads. There will undoubtedly be other cases involving intentional quality degradation along various dimensions, including privacy protection. Some firms will argue that competitive pressure curbs or prevents the intentional degradation of quality. This piece reveals the contrary, that search engines can and do degrade quality, even when competition is a click away.